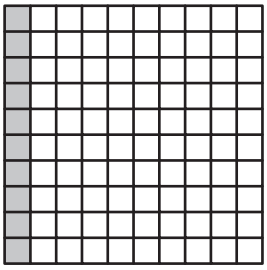
New England Common Assessment Program

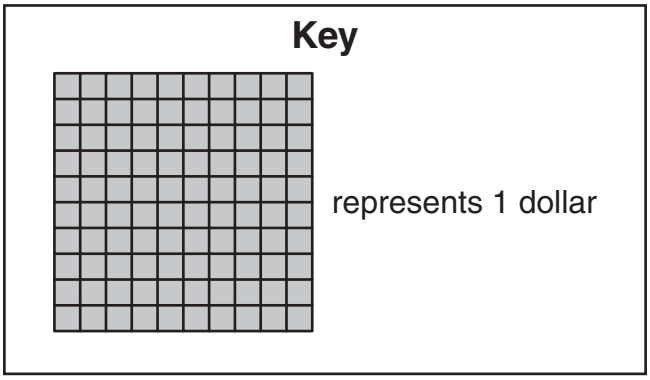
Released Items
Support Materials
2008

Grade 4
Mathematics

N&O 3.1 **Demonstrates conceptual understanding of rational numbers with respect to: whole numbers** from 0 to 999 through equivalency, composition, decomposition, or place value **using models, explanations, or other representations**; and **positive fractional numbers** (benchmark fractions: *a*/2, *a*/3, *a*/4, *a*/6, or *a*/8, where *a* is a whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship in area and set models where the number of parts in the whole is equal to the denominator; and **decimals** (within a context of money) as a part of 100 **using models, explanations, or other representations.**

1 Megan shaded this grid gray to show how much money she has.





How much money does Megan have?

- ○ A. $ 0.01
- ○ B. $ 0.10
- ○ C. $ 1.00
- ○ D. $10.00

N&O 3.2 **Demonstrates understanding of the relative magnitude of numbers** from 0 to 999 by ordering whole numbers; by comparing whole numbers to benchmark whole numbers (100, 250, 500, or 750); or by comparing whole numbers to each other; and comparing or identifying equivalent positive fractional numbers (*a*/2, *a*/3, *a*/4 where *a* is a whole number greater than 0 and less than or equal to the denominator) using models, number lines, or explanations.

2 Cory said, "567 is less than 678."

Maggie said, "678 is greater than 681."

Which sentence is true?

- ○ A. Only Cory's sentence is true.
- ○ B. Only Maggie's sentence is true.
- ○ C. Both Cory's and Maggie's sentences are true.
- ○ D. Both Cory's and Maggie's sentences are false.

N&O 3.3 **Demonstrates conceptual understanding of mathematical operations** by describing or illustrating the inverse relationship between addition and subtraction of whole numbers; and the relationship between repeated addition and multiplication using models, number lines, or explanations.

3 Ms. Jaffe solved this problem.

38 + 27 = 65

Which number sentence could Ms. Jaffe use to check her work?

- ○ A. 38 + 65 = □
- ○ B. 65 – 38 = □
- ○ C. 38 – 27 = □
- ○ D. 65 + 27 = □

N&O 3.4 **Accurately solves problems involving** addition and subtraction with and without regrouping; the concept of multiplication; and addition or subtraction of decimals (in the context of money).

4 Libby had a ten-dollar bill. Then she spent $2.85 at a store. How much money does Libby have now?

- ○ A. $ 7.15
- ○ B. $ 7.25
- ○ C. $ 8.85
- ○ D. $12.85

G&M 3.6 **Demonstrates conceptual understanding of perimeter of** polygons, and **the area of** rectangles on grids using a variety of models or manipulatives. Expresses all measures using appropriate units.

5 Look at these figures.

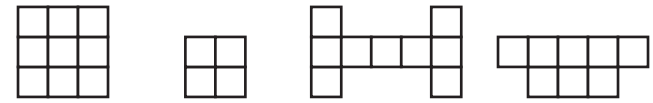


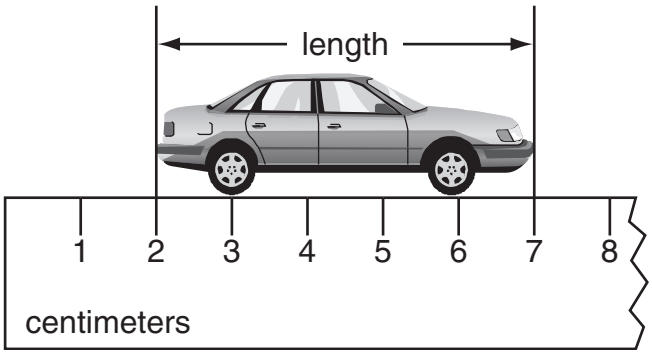
Figure J Figure K Figure L Figure M

Which two figures have the same area?

- ○ A. Figures J and K
- ○ B. Figures J and L
- ○ C. Figures K and M
- ○ D. Figures L and M

G&M 3.7 **Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems** across the content strands.

6 Look at this toy car.

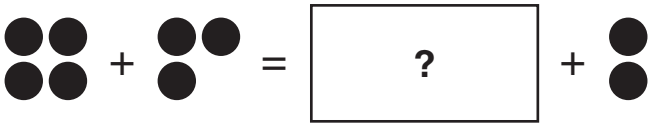


What is the length of the toy car in centimeters?

- ○ A. 4 centimeters
- ○ B. 5 centimeters
- ○ C. 6 centimeters
- ○ D. 7 centimeters

F&A 3.4 **Demonstrates conceptual understanding of equality** by showing equivalence between two expressions using models or different representations of the expressions; or by finding the value that will make an open sentence true (e.g., $2 + \square = 7$). (limited to one operation and limited to use addition, subtraction, or multiplication)

7 Look at this model of a number sentence.



Which set of circles belongs in the box to make this number sentence true?

○ A. 

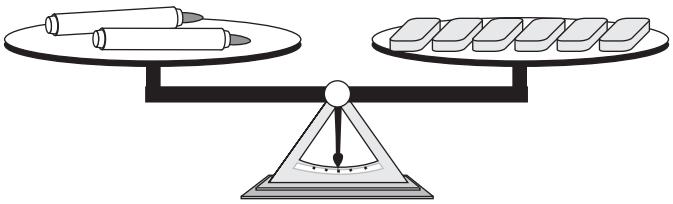
○ B. 

○ C. 

○ D. 

F&A 3.4 **Demonstrates conceptual understanding of equality** by showing equivalence between two expressions using models or different representations of the expressions; or by finding the value that will make an open sentence true (e.g., $2 + \square = 7$). (limited to one operation and limited to use addition, subtraction, or multiplication)

8 The scale shown below is balanced.



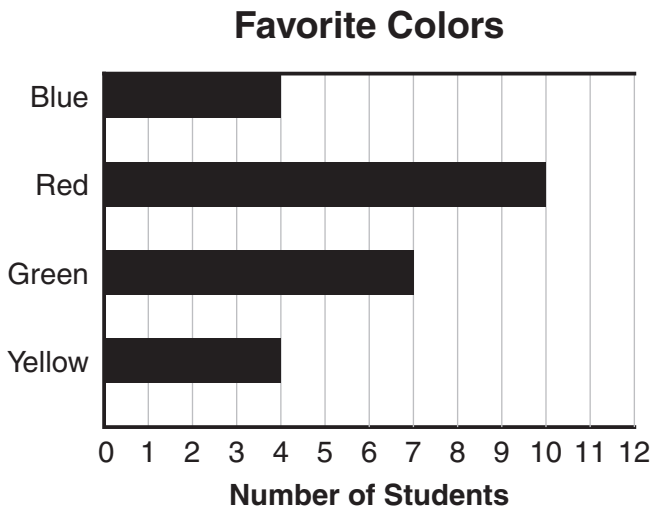
All of the markers have the same weight. All of the erasers have the same weight.

How many erasers balance one marker?

- ○ A. 6
- ○ B. 4
- ○ C. 3
- ○ D. 2

DSP 3.1 **Interprets a given representation** (line plots, tally charts, tables, or bar graphs) to answer questions related to the data, to analyze the data to formulate conclusions, or to make predictions.

9 This bar graph shows the favorite colors of students in Ms. Kelly's class. Each student voted for only one color.



How many students voted in Ms. Kelly's class?

- ○ A. 4
- ○ B. 7
- ○ C. 10
- ○ D. 25

DSP 3.3 **Identifies or describes representations or elements of representations that best display a given set of data or situation**, consistent with the representations required in M(DSP)–3–1.

10 Martin increased the number of sit-ups he did each week by 3. Which table could show the number of sit-ups Martin did for 5 weeks?

○ A.

Week	Number of Sit-Ups
1	51
2	52
3	53
4	54
5	55

○ B.

Week	Number of Sit-Ups
1	60
2	63
3	66
4	69
5	72

○ C.

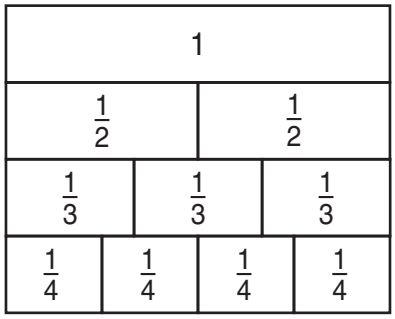
Week	Number of Sit-Ups
1	3
2	9
3	27
4	81
5	163

○ D.

Week	Number of Sit-Ups
1	65
2	68
3	70
4	73
5	76

N&O 3.2 **Demonstrates understanding of the relative magnitude of numbers** from 0 to 999 by ordering whole numbers; by comparing whole numbers to benchmark whole numbers (100, 250, 500, or 750); or by comparing whole numbers to each other; and comparing or identifying equivalent positive fractional numbers ($a/2$, $a/3$, $a/4$ where a is a whole number greater than 0 and less than or equal to the denominator) using models, number lines, or explanations.

11 Look at this model.



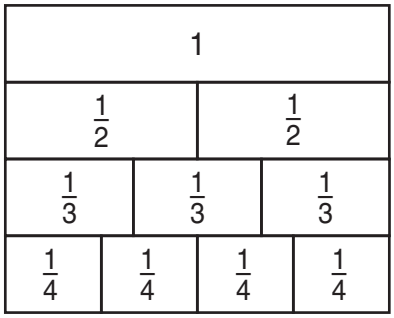
Write a fraction that is greater than $\frac{1}{4}$ and less than $\frac{2}{3}$.

Scoring Guide

Score	Description
1	Student has correct answer, any fraction that is greater than $\frac{1}{4}$ and less than $\frac{2}{3}$.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Score Point 1
(Example A)

⓫ Look at this model.

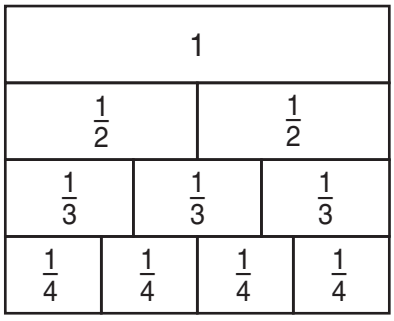


Write a fraction that is greater than $\frac{1}{4}$ and less than $\frac{2}{3}$.

$\frac{1}{2}$ — Student's response is correct.

Score Point 1
(Example B)

⓫ Look at this model.

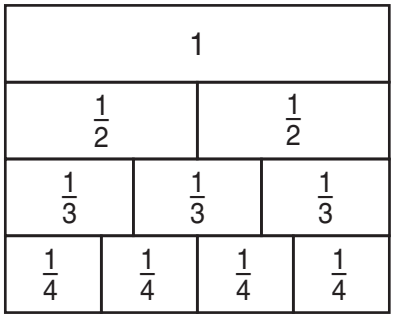


Write a fraction that is greater than $\frac{1}{4}$ and less than $\frac{2}{3}$.

$\frac{3}{9}$ — Student's response is correct.

SCORE POINT 1
(EXAMPLE C)

11 Look at this model.

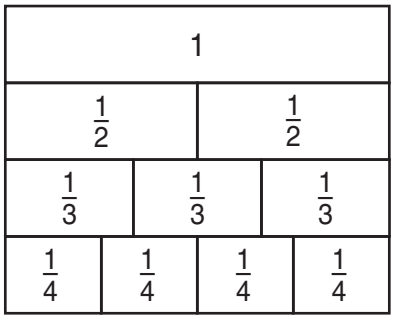


Write a fraction that is greater than $\frac{1}{4}$ and less than $\frac{2}{3}$.

$\frac{2}{5}$ — Student's response is correct.

SCORE POINT 0
(EXAMPLE A)

11 Look at this model.

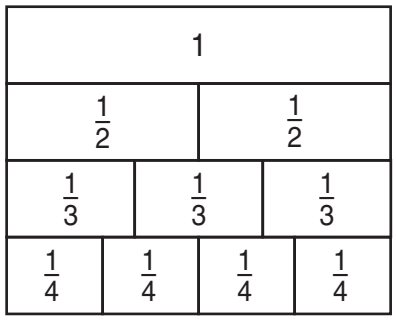


Write a fraction that is greater than $\frac{1}{4}$ and less than $\frac{2}{3}$.

$\frac{2}{2}$ — Student's response is incorrect.

SCORE POINT 0
(EXAMPLE B)

11 Look at this model.



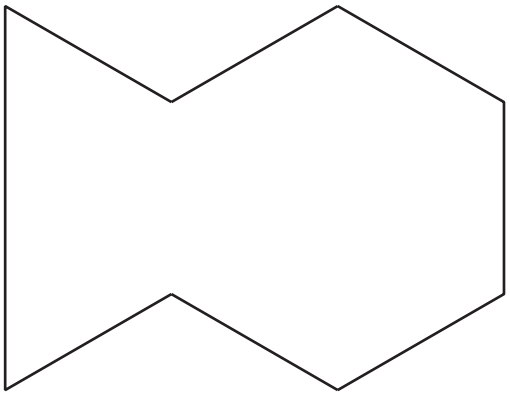
Write a fraction that is greater than $\frac{1}{4}$ and less than $\frac{2}{3}$.

$\frac{1}{5}$

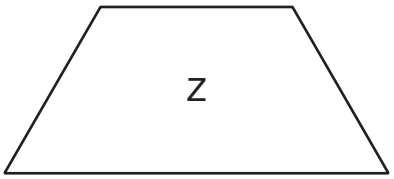
Student's response is incorrect.

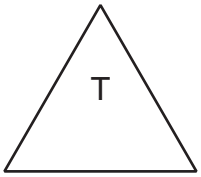
G&M 3.1 **Uses properties or attributes of angles** (number of angles) **or sides** (number of sides or length of sides) or composition or decomposition of shapes **to identify, describe, or distinguish among** triangles, squares, rectangles, rhombi, trapezoids, hexagons, or circles.

12 Look at this figure.

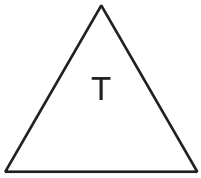


Maya used shapes to cover the figure without any gaps or overlaps.

- She used **exactly one** 

.
- She used **some** 

.
- She used **no** other shapes.

How many 

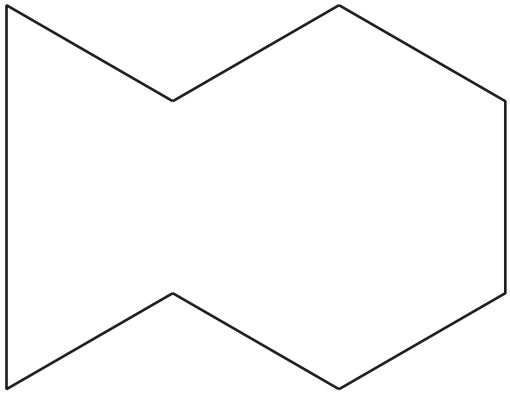
did Maya use?

Scoring Guide

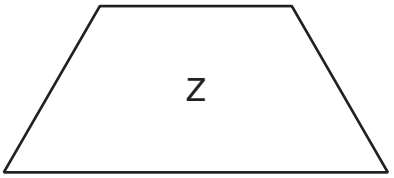
Score	Description
1	Student gives correct answer, **6**.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

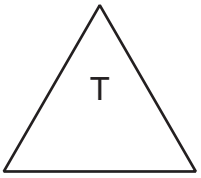
SCORE POINT 1
(EXAMPLE A)

12 Look at this figure. 



Maya used shapes to cover the figure without any gaps or overlaps.

- She used **exactly one** 

.
- She used **some** 

.
- She used **no** other shapes.

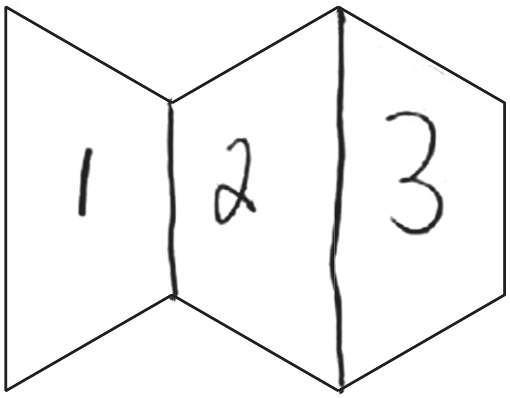
How many 

did Maya use?

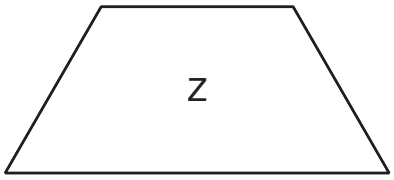
Student's response is correct.

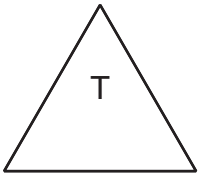
SCORE POINT 1
(EXAMPLE B)

⓬ Look at this figure. 

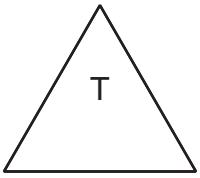


Maya used shapes to cover the figure without any gaps or overlaps.

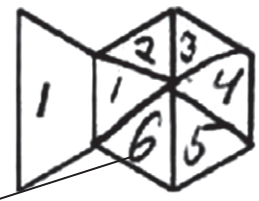
- She used **exactly one** 

.
- She used **some** 

.
- She used **no** other shapes.

How many 

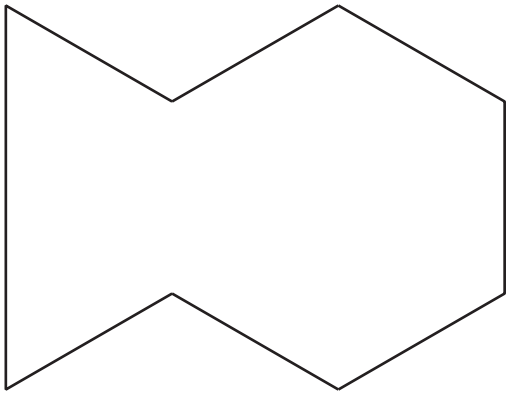
did Maya use?



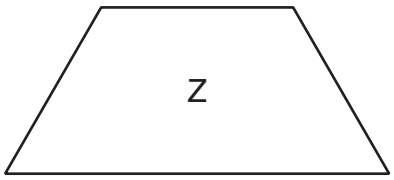
Student's response is correct. The answer is clearly indicated in the work shown.

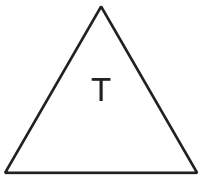
SCORE POINT 0
(EXAMPLE A)

12 Look at this figure.

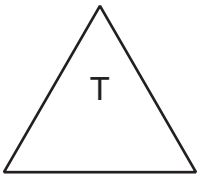


Maya used shapes to cover the figure without any gaps or overlaps.

- She used **exactly one** 

.
- She used **some** 

.
- She used **no** other shapes.

How many 

did Maya use?

Student's response is incorrect.

F&A 3.1 **Identifies and extends to specific cases a variety of patterns** (linear and non-numeric) represented in models, tables, or sequences by extending the pattern to the next one, two, or three elements, or finding missing elements.

13 Luis made a pattern on this number chart by circling numbers. He started at 32.

31	(32)	33	34	35	36	37	(38)	39	40
41	42	43	(44)	45	46	47	48	49	(50)
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	(68)	69	70

He forgot to circle two numbers **between** 50 and 68 in his pattern. What two numbers did Luis forget to circle?

Scoring Guide

Score	Description
1	Student gives correct answer, **56, 62**.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

SCORE POINT 1
(EXAMPLE A)

⓭ Luis made a pattern on this number chart by circling numbers. He started at 32.

31	(32)	33	34	35	36	37	(38)	39	40
41	42	43	(44)	45	46	47	48	49	(50)
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	(68)	69	70

He forgot to circle two numbers **between** 50 and 68 in his pattern. What two numbers did Luis forget to circle?

56 and 62 because he's counting by 6 from 32. 32, 38, 44, 50, 56, 62, 68.

Student's response is correct. (Explanation or work shown is not required.)

SCORE POINT 1
(EXAMPLE B)

⓭ Luis made a pattern on this number chart by circling numbers. He started at 32.

31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

Student's response is correct. (Explanation or work shown is not required.)

He forgot to circle two numbers **between** 50 and 68 in his pattern. What two numbers did Luis forget to circle?

I thaut I would Cont By 6

SCORE POINT 0
(EXAMPLE A)

⓭ Luis made a pattern on this number chart by circling numbers. He started at 32.

31	(32)	33	34	35	36	37	(38)	39	40
41	42	43	(44)	45	46	47	48	49	(50)
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	(68)	69	70

He forgot to circle two numbers **between** 50 and 68 in his pattern. What two numbers did Luis forget to circle?

The numbers are 55 and 62.

Student's response is incorrect. Student's response only contains one correct number.

SCORE POINT 0
(EXAMPLE B)

⓭ Luis made a pattern on this number chart by circling numbers. He started at 32.

31	(32)	33	34	35	36	37	(38)	39	40
41	42	43	(44)	45	46	47	48	49	(50)
51	52	53	54	55	(56	~~57~~	~~58~~	59	60
61	(62	~~63~~	64	65	66	67	(68)	69	70

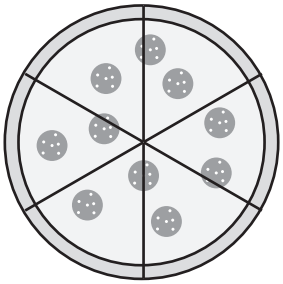
Student circles the correct numbers but writes incorrect numbers. Because the student's response contains conflicting information, no credit is given.

He forgot to circle two numbers **between** 50 and 68 in his pattern. What two numbers did Luis forget to circle?

55 and 61

N&O 3.1 **Demonstrates conceptual understanding of rational numbers with respect to: whole numbers** from 0 to 999 through equivalency, composition, decomposition, or place value **using models, explanations, or other representations**; and **positive fractional numbers** (benchmark fractions: *a*/2, *a*/3, *a*/4, *a*/6, or *a*/8, where *a* is a whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship in area and set models where the number of parts in the whole is equal to the denominator; and **decimals** (within a context of money) as a part of 100 **using models, explanations, or other representations.**

14 Tran and Ali shared this pizza. Tran ate 3 pieces and Ali ate 2 pieces.



a. What fraction of the pizza is left over?

b. Explain the meaning of each number in the fraction you wrote.

Scoring Guide

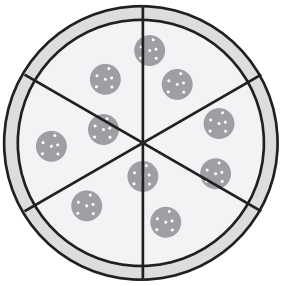
Score	Description
2	Student writes correct fraction, $\frac{1}{6}$ **or equivalent**, and gives sufficient explanation of the meaning of each number in the fraction.
1	Student writes correct fraction. OR Student gives sufficient explanation of the meaning of each number in the fraction.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Note:

Student does not need to use the terms numerator and denominator.

SCORE POINT 2
(EXAMPLE A)

14 Tran and Ali shared this pizza. Tran ate 3 pieces and Ali ate 2 pieces.



a. What fraction of the pizza is left over?

$\frac{1}{6}$ of the pizza is left.

a) Student's response is correct.

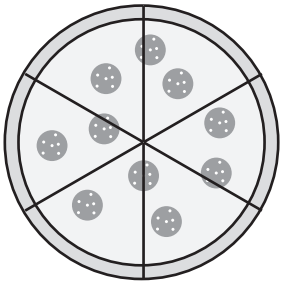
b. Explain the meaning of each number in the fraction you wrote.

The six in this fraction means there are six pieces of pizza. The 1 means there is 1 out of six pieces left.

b) Student gives sufficient explanation for each number in the fraction.

SCORE POINT 2
(EXAMPLE B)

14 Tran and Ali shared this pizza. Tran ate 3 pieces and Ali ate 2 pieces.



a. What fraction of the pizza is left over?

$\frac{1}{6}$

a) Student's response is correct.

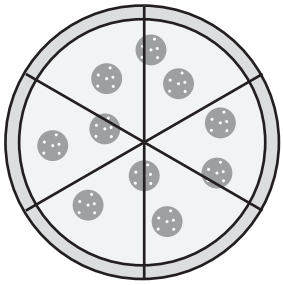
b. Explain the meaning of each number in the fraction you wrote.

There was 6 pieces. 3+2=5
6-5=1.

b) Student gives sufficient explanation for each number in the fraction.

SCORE POINT 1
(EXAMPLE A)

14 Tran and Ali shared this pizza. Tran ate 3 pieces and Ali ate 2 pieces.



a. What fraction of the pizza is left over?

$\frac{1}{6}$

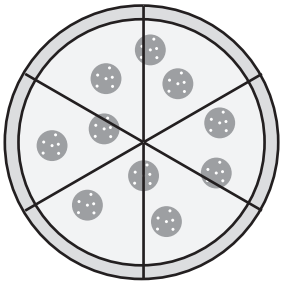
a) Student's response is correct.

b. Explain the meaning of each number in the fraction you wrote.

b) Student does not respond.

SCORE POINT 1
(EXAMPLE B)

14 Tran and Ali shared this pizza. Tran ate 3 pieces and Ali ate 2 pieces.



a. What fraction of the pizza is left over?

$\frac{5}{6}$ is left over

a) Student's response is incorrect.

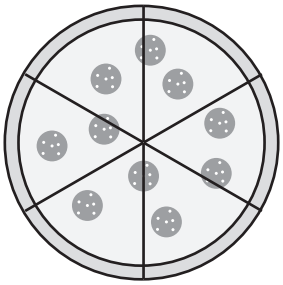
b. Explain the meaning of each number in the fraction you wrote.

There is 6 pieces of pizza so you write 6 at the bottom, Ali and Tran ate 5 pieces in all so you put 5 at the top.

b) Student gives sufficient explanation for each number in the fraction given in part a.

SCORE POINT 1
(EXAMPLE C)

14 Tran and Ali shared this pizza. Tran ate 3 pieces and Ali ate 2 pieces.



a. What fraction of the pizza is left over?

1/6

a) Student's response is correct.

b. Explain the meaning of each number in the fraction you wrote.

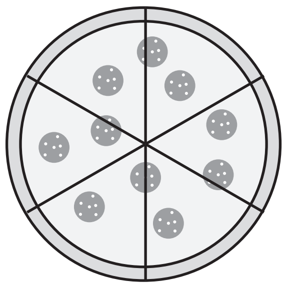
1 = One

6 = Sixt

b) Student gives insufficient explanation for each number in the fraction.

SCORE POINT 0
(EXAMPLE A)

14 Tran and Ali shared this pizza. Tran ate 3 pieces and Ali ate 2 pieces.



a. What fraction of the pizza is left over?

1
+0
———
1

Student's response to both parts gives no evidence of understanding fractions.

b. Explain the meaning of each number in the fraction you wrote.

I wrote 1+0=1 because Tran ate 3 and Ali ate 2 and 3-2=1.

N&O 3.4 **Accurately solves problems involving** addition and subtraction with and without regrouping; the concept of multiplication; and addition or subtraction of decimals (in the context of money).

15 Harold is planning a party for 32 people. He has some round tables and some square tables.

- There are 6 chairs at each round table.
- There are 4 chairs at each square table.

What is the **fewest** number of tables Harold needs for 32 people with no chairs left over? Show your work or explain how you know.

Scoring Guide

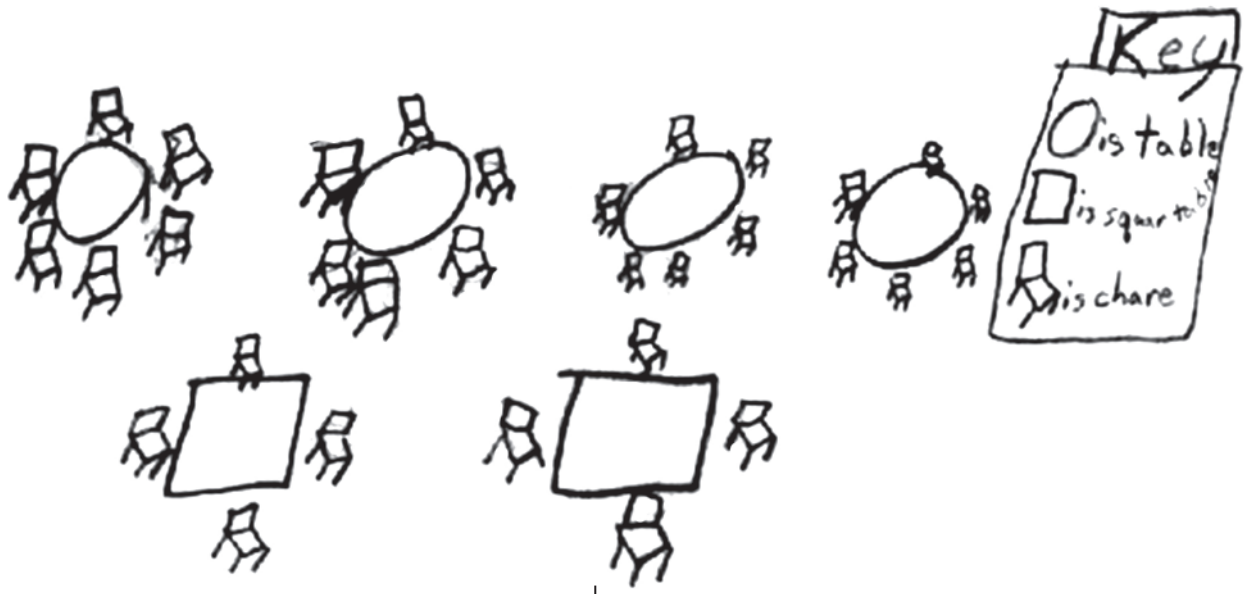
Score	Description
2	Student gives the correct answer, **4 round tables** and **2 square tables**, with sufficient explanation or work shown to indicate correct strategy.
1	Student gives the correct answer with insufficient or no explanation or work shown. OR Student gives appropriate strategy with incorrect or no answer. OR Student gives correct combination of tables for 32 chairs that is not the fewest number of tables.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

SCORE POINT 2
(EXAMPLE A)

15 Harold is planning a party for 32 people. He has some round tables and some square tables.

- There are 6 chairs at each round table.
- There are 4 chairs at each square table.

What is the **fewest** number of tables Harold needs for 32 people with no chairs left over? Show your work or explain how you know.

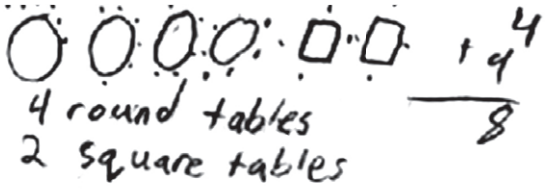


Student's response indicates the correct number of square tables and round tables.

SCORE POINT 2
(EXAMPLE B)

15 Harold is planning a party for 32 people. He has some round tables and some square tables.

- There are 6 chairs at each round table.
- There are 4 chairs at each square table.



What is the **fewest** number of tables Harold needs for 32 people with no chairs left over? Show your work or explain how you know.

I knew 4 round tables because I wanted to get as many as a could big tables. I first tried five but then where would the left over people sit. So it had to be four. Then I needed some square tables I knew that 4 people go around each square table. I also so knew that 2 square tables is 8 people and that was how many I needed so I added them in and I had it, 2 square tables 4 round tables.

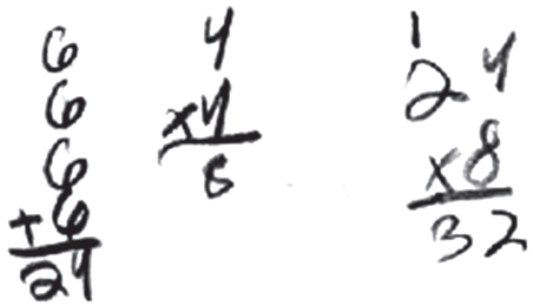
Student's response is correct. The explanation indicates the correct strategy.

SCORE POINT 2
(EXAMPLE C)

15 Harold is planning a party for 32 people. He has some round tables and some square tables.

- There are 6 chairs at each round table.
- There are 4 chairs at each square table.

What is the **fewest** number of tables Harold needs for 32 people with no chairs left over? Show your work or explain how you know.



I add all the naber

Student's response indicates the correct number of square tables and round tables. The work shown indicates the correct strategy.

SCORE POINT 1
(EXAMPLE A)

15 Harold is planning a party for 32 people. He has some round tables and some square tables.

- There are 6 chairs at each round table.
- There are 4 chairs at each square table.

What is the **fewest** number of tables Harold needs for 32 people with no chairs left over? Show your work or explain how you know.

I did 2 round tabels and 5 square tabels and I got 32 chairs.

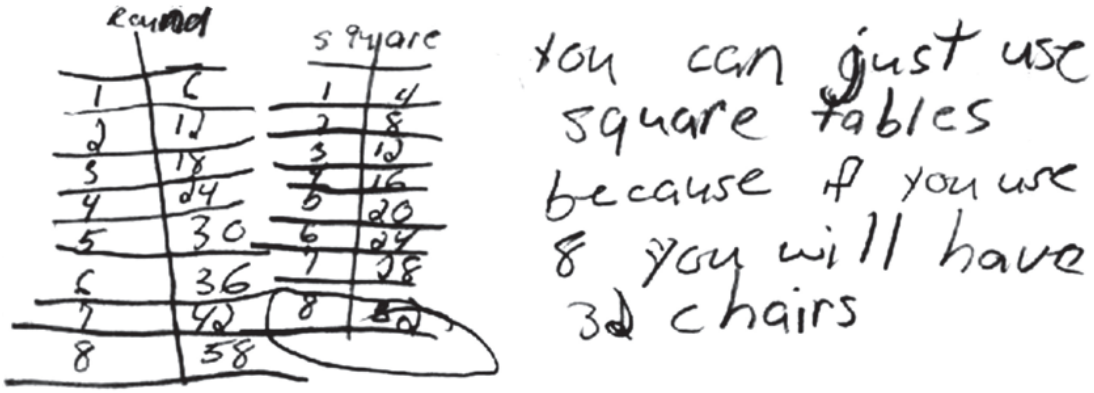
Student gives a combination of tables that has 32 chairs, but does not use the minimum number of tables.

SCORE POINT 1
(EXAMPLE B)

15 Harold is planning a party for 32 people. He has some round tables and some square tables.

- There are 6 chairs at each round table.
- There are 4 chairs at each square table.

What is the **fewest** number of tables Harold needs for 32 people with no chairs left over? Show your work or explain how you know.



Student gives a combination of tables that has 32 chairs, but does not use the minimum number of tables.

SCORE POINT 0
(EXAMPLE A)

15 Harold is planning a party for 32 people. He has some round tables and some square tables.

- There are 6 chairs at each round table.
- There are 4 chairs at each square table.

What is the **fewest** number of tables Harold needs for 32 people with no chairs left over? Show your work or explain how you know.

he needs 7 square tables and No round tables

Student's response is incorrect, with insufficient explanation to give credit for strategy.

DSP 3.1 **Interprets a given representation** (line plots, tally charts, tables, or bar graphs) to answer questions related to the data, to analyze the data to formulate conclusions, or to make predictions.

16 This table shows how many days some students helped in the library.

Student	Number of Days
Tom	7
Jill	
Anita	10
Yuri	5

a. Jill helped in the library 3 more days than Yuri helped. How many days did Jill help in the library? Write your answer in the table.

b. Use the data in this table to write a question that has an answer of **2 days**.

Scoring Guide

Score	Description
2	Student gives correct answer in part a, **8**, and writes an appropriate question in part b.
1	Student gives correct answer in part a only. OR Student writes an appropriate question in part b only. OR Student writes an appropriate question in part b based on an incorrect answer in part a.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

SCORE POINT 2
(EXAMPLE A)

16 This table shows how many days some students helped in the library.

Student	Number of Days
Tom	7
Jill	8
Anita	10
Yuri	5

a) Student's response is correct.

a. Jill helped in the library 3 more days than Yuri helped. How many days did Jill help in the library? Write your answer in the table.

b. Use the data in this table to write a question that has an answer of **2 days**.

Anita helped for ten Days and Jill had worked in the library for eight Days how many Days Did Anita help More then Jill?

b) Student writes an appropriate question.

SCORE POINT 2
(EXAMPLE B)

16 This table shows how many days some students helped in the library.

Student	Number of Days
Tom	7
Jill	8
Anita	10
Yuri	5

a) Student's response is correct.

a. Jill helped in the library 3 more days than Yuri helped. How many days did Jill help in the library? Write your answer in the table.

b. Use the data in this table to write a question that has an answer of **2 days**.

Tom worked 7 days. Yuri worked 5 days. How many more days did Tom work than yuri?

7 - 5 = 2

2 days

b) Student writes an appropriate question. Additional information does not conflict with correct response.

SCORE POINT 1
(EXAMPLE A)

16 This table shows how many days some students helped in the library.

Student	Number of Days
Tom	7
Jill	8
Anita	10
Yuri	5

a) Student's response is correct.

a. Jill helped in the library 3 more days than Yuri helped. How many days did Jill help in the library? Write your answer in the table.

b. Use the data in this table to write a question that has an answer of **2 days**.

Tom helped in the library
2 more days than who?

b) Student's question does not have an answer of 2 days.

SCORE POINT 0
(EXAMPLE A)

16 This table shows how many days some students helped in the library.

Student	Number of Days
Tom	7
Jill	13
Anita	10
Yuri	5

a) Student's response is incorrect.

a. Jill helped in the library 3 more days than Yuri helped. How many days did Jill help in the library? Write your answer in the table.

b. Use the data in this table to write a question that has an answer of **2 days**.

Tom help two more days then Yuri. I You add 7+5 what do you get?

b) Student's question does not have an answer of 2 days.

SCORE POINT 0
(EXAMPLE B)

16 This table shows how many days some students helped in the library.

Student	Number of Days
Tom	7
Jill	10
Anita	10
Yuri	5

a) Student's response is incorrect.

a. Jill helped in the library 3 more days than Yuri helped. How many days did Jill help in the library? Write your answer in the table.

b. Use the data in this table to write a question that has an answer of **2 days**.

Tom helped the library more than Yuri because Tom did it Seven days.

b) Student does not write a question.